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NEURAL TUBE DEFECTS IN BASRAH - CLINICAL STUDY

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ABSTRACT

Neural tube defects (NTD) are one of the commonest congenital malformations of the central nervous system, with an average prevalence at birth of 1 per 1000. They are caused by a failure in the process of neural tube closure. Under normal circumstances, the nervous system forms a closed tube after 4 weeks of gestation. Sometimes, for principally unknown reasons, the neural walls do not fuse. This may result in a minor or a major defect: spina bifida occultaorspina bifida aperta, respectively. When the lesion occurs in the cranial region, the anomaly is called anencephaly (1, 2). This paper evaluates the clinical state of parents, obstetric history and makes highlights on clinical state and sex distribution of NTD children in Basrah.

SUBJECT AND METHOD

A prospective observational study for 87 cases of NTD children were presented to and managed in Al-Sadr teaching hospital in Basrah during period of 3 years June 2014- June 2017. All cases were managed by the authors, and they discussed clinical status of the parents, obstetric history and clinical aspect for the child with NTD.

RESULTS

Maternal chronic medical history may play more significant role in causation of NTD than paternal side. Urinary tract infections and upper respiratory infections were the commonest diseases happened during pregnancy. There is poor antenatal care (ANC) and consequently, no perfect folic acid supplementation program (20% only were taking folic acid, butin irregular manner). Abortion and still birth history was not so common for the mothers with NTD child. Generally, NTD is more common in female. The commonest anomaly is myelomeningocele (mm)with hydrocephaly4(hc) (54%). Males are more affected in case of hydrocephaly only (61%), and family history of NTD was positive in 39% of cases. History of abortion is positive in 28.7% (for one and two times), and 11.5 % had still birth history and associated anomalies were positive in 46%.

CONCLUSIONS

Maternal medical history may have a role in NTD occurrence. Our families are not oriented for the role of the ANC in prevention of congenital diseases, especially in case of folic acid intake with NTD. The commonest NTD anomaly in Basrah is myelomeningocel plus hydrocephaly, which is more in female.

KEYWORDS: NTD, ANC & Folic Acid

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INTRODUCTION

NTD remains a frequent congenital defect and a serious medical and public health problem. They are the second most common type of birth defect after congenital heart defects (3). The most common types of NTDs are anencephaly and spinabifida, which typically present as open NTDs; such NTD occur when neural tissue is exposed to the environment or only covered by a membrane. Less common are encephalocele and meningocele, which

typically present as closed NTD, in which the defect is covered by normal skin. Anencephaly is fatal in all cases; infants with spinabifida frequently survive following surgery [4]. These defects are thought to result in part from genetic risk factors. Environmental (non-inherited) factors are also thought to play a role in NTD development; however established risk factors, such as folate levels(5, 6), maternal diabetes (5), and use of antiepileptic medications(7,8, 9), account for only a small proportion of prevalent NTDs, indicating that unidentified risk factors for NTD still remain.

The main cause of NTD are abnormalities that occur during neurelation, which should be complete by 4 weeks postconception(10).

However, these serious birth defects are to a large extent preventable by adequate intake of folic acid by women of the reproductive age and several studies reported that preconceptional supplementation of folic acid can prevent up to 50% of the cases of NTD as well as cardiac and craniofacial abnormalities [11–13]. Despite wide availability of its natural food sources (green leafy vegetables, bananas, legumes), folic acid deficiency among women of reproductive age is common worldwide(14, 15) usually as a result of low-dietary intake or cooking losses (16).

PATIENTS AND METHODS

A prospective observational study for a 87 case of a diseased children with NTD presented at Alsadr Teaching Hospital in basrah during period of 3 years, 2014-2017. The study discuss clinical state of parents, obstetric history and clinical aspect of the NTD.

RESULTS

Maternal Chronic medical history may play more significant role in causation of ntd than paternal side table (1)about 25% of mothers had history of chronic medical disease (DM, HT, sickling.. 0)while 10%of fathers had such history.

Table 1: Parents Systemic Diseases

Chronic Diseases	DM	HT	Both	Sickling	Others	Non
Mather	2	4	5	5	6	65(74.7%)
Father	4	3	2	-	-	78(89.6%)

DM = Diabetes
HT = Hypertension

Regarding obstetric history table (2-5), most common disease during pregnancy table (2) was flu(51% from the affected cases). Others illness include: urinary, respiratory tract infections and gastroenteritis. Regarding ANC table (3)26.4% of mothers had regular antenatal care, 44.8 % of them had irregular remaining 28.7 % of them had no ANC at all. More than 80% of mothers were not taken folic acid at all table (4)and 19.5 % of them toke Folic acid irregularly. Abortion history table (5) was occurred in 29 % of mothers, most of them (25%) was 1-2 abortion time. 10 of them (11.5%) had history of still birth.

Table 2: Diseases During Pregnancy

Flu	UTI	RTI	G E	Non
20(51.2%)	15	2	2	48(55%)

Table 3: Mother ANC

Regular	Irregular	Non
23 (26.4%)	39 44.8%)	25 (28.7%

Table 4: Folic Acid in take during Pregnancy

Yes	No
17(19.5%)	70(80.4%)
Regular 0% Irregular19.5%	

Table 5: Abortion and Still Birth History

Abortion	**No**	**1**	**2≤**
	62 (71.3%)	22 (25.3%)	3 (3.4%)
Still Birth	**No**	**1**	**2≤**
	78 (89.7%)	10 (11.5%)	-

About table (6) which discussing the anomalies, myelomeningocele accompanied by hydrocephaly is the commonest anomaly that occurred in 54% of cases followed by hydrocephaly 20.7%, encephalpcele 13.8%, meningocele is 8% and myelomeningocele 3.4 % respectively. Female was dominant in most anomalies especially myelomeningocele with HC as about (76.5%), but male is dominant in case of isolated hydrocephaly as (61%). In table (7), family history of NTD was found in 39% of cases only and 46% of cases had associated other congenital anomalies.

Table 6: NTD and Sex Distribution

	M	MM	MM&HC	E	H. C.
	7 (8%)	3 (3.4%)	47 (54%)	12 (13.8%)	18 (20.7%)
Male	3	1	11	5	11
Female	4	2	36	7	7

M = meningocele
MM = myelomeningocele
HC = hydrocephaly
E = encephalocele

Table 7: Associated Anomalies and Family History of NTD

Associated Anomalies		Family History	
Yes	**No**	**Yes**	**No**
40 (46%)	47 (54%)	34 (39%)	53 (60.9%)

DISCUSSIONS

Mother chronic disease(dmhtsikling …) can have an effect in NTD incidence through presence of 25% positive cases, a study in Finland says that insulin dependent diabetes mellitus mothers has more incidence of NTD child(16) also a study end that Maternal epilepsy as well as the use of the anti-epileptic drug valproic acid increases the risk of spina bifida (18). more than half of mothers had no medical problem during pregnancy, and those with such a history were complaining from upper respiratory and urinary tract infections as the commonest diseases. In Finland also a study show that no

association between influenza epidemics in general and the occurrence of anencephaly, based on combined (but not linked) data on influenza epidemics (19). Generally there is bad ANC history for the mothers and no case had a perfect ANC program, because even those with regular visits but had wrong intervals.

Folic acid was taken in about 20% of mothers but on irregular manner, (Maternal peri conceptual folic acid supplementation in Switzerland study was correct in only (5%)(20)), so Switzerland study found that there is no maternal regular folic acid intake during pregnancy and women still do not follow these recommendations in that country,30% of mothers had history of abortion mostly 1-2 times and 10% had still birth history this may indicate a maternal liability to get congenital malformed fetus with or without NTD., there is a 3% to 4% chance of having another baby with this condition. If the baby's open spina bifida was part of a genetic syndrome, the chances can be much higher – up to 25%. (21)

About NTD types and sex distribution, generally it is more in female that agree with a study did in kashmer (22). Myelomeningocele plus hydrocephaly was the commons malformation, which present in more than half of cases.

CONCLUSIONS

Maternal disease in general can reflects positively on NTD, we have in basra poor ANC mainly due to maternal side disorientation, NTD in Iraq has more incidence in female. myelomenigocle with hydrocephali is the commonest anomaly. Protective role of periconceptual folic acid supplementation is clear, women of childbearing age still do not follow the recommendations. Consequently, only a public health policy that includes folic acid fortification of food is likely to result in significant prevention of NTD. From other side further research should not only focus on occupational title but on specific exposures and exposure levels as well.

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